



North Carolina Department Of Environment And Natural Resources
Division of Waste Management
Solid Waste Section

APPROVED ALTERNATIVE DAILY COVER MATERIALS FOR USE AT SANITARY LANDFILLS

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NOTICE

This is a guidance document developed to assist landfills in the selection and use of alternative daily cover materials. It should not be interpreted as a replacement to North Carolina General Statutes or Administrative Code. DENR officials may determine that the guidance is not applicable based on site specific conditions. DENR reserves the right to change this guidance at any time without public notice.

Guidance Document History

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INTRODUCTION

During the 2013 session of the North Carolina General Assembly, Session Law 2013-413 was passed which amended North Carolina General Statute (NCGS) 130A-295.6 concerning the use of alternative cover materials (ACM) as daily cover at sanitary landfills. The statute states that once an ACM has been approved for use by the Department of Environment and Natural Resources (NCDENR) at any sanitary landfill in North Carolina, it may be used at all sanitary landfills within the state.

The Solid Waste Section (Section) of the NCDENR Division of Waste Management prepared this guidance document to assist the regulated community in the implementation of the statute. Section staff developed an inventory of ACM approved for use in North Carolina and the summarized the approved operational conditions and application processes for use of the ACM. This information, along with instructions on how to add the use of previously approved ACM to a sanitary landfill operation and permit, is provided.

REGULATORY AUTHORITY AND INTERPRETATION

Industrial waste landfills (IndLF), construction and demolition solid waste landfills (C&DLF), and municipal solid waste landfills (MSWLF) are all considered sanitary landfills by North Carolina statutes and rules.

Previously there was no statutory language regarding daily cover, alternative daily cover or alternative cover materials. However, cover requirements and alternatives based on specific types of sanitary landfills were addressed in the Solid Waste Management Rules - Title 15A Chapter 13, Subchapter B of the North Carolina Administrative Code (15A NCAC 13B). The following rule references provide the current requirements which can affect the use of an ACM at a specific type of sanitary landfill.

Industrial waste landfills are permitted and operated under Sections .0503, .0504, .0505 and .0510 of the NCAC.

- Part .0505(3)(a) specifically states: *Solid waste shall be covered after each day of operation, with a compacted layer of at least six inches of suitable cover or as specified by the Division.*

C&D waste landfills are currently permitted and operated under Sections .0531 through .0547 of the NCAC.

- Part .0542(f)(1) states: *Except as provided in Subparagraph (3) of this Paragraph, the owners and operators of all C&DLF units must cover the solid waste with six inches of earthen material when the waste disposal area exceeds one-half acre and at least once weekly. Cover must be placed at more frequent intervals if necessary to control disease vectors, fires, odors, blowing*

litter, and scavenging. A notation of the date and time of the cover placement must be recorded in the operating record as specified in Paragraph (n) of this Rule.

- *Part .0542(f)(3) states: Alternative materials or an alternative thickness of cover may be approved by the Division if the owner or operator demonstrates that the alternative material or thickness controls disease vectors, fires, odors, blowing litter, and scavenging without presenting a threat to human health and the environment. A C&DLF owner or operator may apply for approval of an alternative cover material. If approval is given by the Division, approval would extend to all C&DLF units at one specific facility.*

MSW landfills are currently permitted and operated under Sections .1601 through .1680 of the NCAC.

- *Part .1626(2)(a) states: Except as provided in Sub-Item (b) of this Item, the owners or operators of all MSWLF units must cover disposed solid waste with six inches of earthen material at the end of each operating day, or at more frequent intervals if necessary, to control disease vectors, fires, odors, blowing litter, and scavenging.*
- *Part .1626(2)(b) states: Alternative materials of an alternative thickness (other than at least six inches of earthen material) may be approved by the Division if the owner or operator demonstrates that the alternative material and thickness control disease vectors, fires, odors, blowing litter, and scavenging without presenting a threat to human health and the environment, in accordance with 40 CFR Part 258.21. A MSWLF owner or operator may apply for a generic approval of an alternative cover material, which would extend to all MSWLF units.*

IMPLEMENTATION

The use of an ACM must be documented in the approved operation plan for the facility. If a facility intends to utilize an ACM that is currently not in their approved operation plan but is included in the ACM summary, they may do so by following one of the following procedures:

1. The facility may elect to use an approved ACM in the manner prescribed in this document. To implement the use of the ACM, the facility owner or operator should place a notice in the facility operating record with the procedure for using the ACM according to the information in this document and send a copy of the notice and procedure to the Permitting Branch Supervisor of the Section and the facilities Environmental Senior Specialist (ESS). The ADC must be incorporated into the facility operation plan and will be listed in the permit at the next permit action.
2. The facility may choose to implement an ACM that has been approved in a manner not prescribed in this document by performing an abbreviated demonstration period. This will allow the operator to tailor the ACM to their specific use, staff, and facility operation. The Section will provide oversight and concurrence to the process. The owner or operator should contact their (ESS) to discuss

the specifications for the testing. At the conclusion of the process, a notice should be placed in the facility operating record with the procedure for using the ACM and a copy of the notice and procedure sent to the Permitting Branch Supervisor of the Section. At the next permit action, the ACM must be incorporated into the facility operation plan and will be listed in the permit.

If a facility wishes to use an ACM that has not previously been approved by the Section, the operator must complete a demonstration process. Contact your ESS for assistance.

COMPLIANCE

Regardless of the method chosen, the Section will ensure compliance with the proper use of the ACM in accordance with the rules, statutes, site specific conditions, and historical precedent. An operator who chooses to implement an ACM as described in choice 1 above will be immediately responsible for compliance and subject to the NCDENR tiered-enforcement process. An operator who chooses option 2 will be subject to enforcement that considers the demonstration nature of the action, with the understanding that changes to the process or ACM will be instituted immediately to correct any issues.

ACM: Automotive Shredder Residuals (ASR)

APPROVED LANDFILL USE: MSWLF, C&DLF (lined)*

MATERIAL CHARACTERISTICS: Automotive Shredder Residuals are the fines remaining after scrap cars have passed through a shredder and all recoverable materials have been removed. ASR can consist of glass, synthetic fibers, rubber, plastics, automobile liquids residue, metal fines and dirt. It is possible for the ASR to contain substances considered hazardous such as lead, cadmium and PCB.

USAGE CRITERIA:

1. ASR can be applied, in lieu of soil, to a full depth of six inches given calm site (weather) conditions.
2. If site (weather) conditions are, or are forecast to be, windy the ASR must either be:
 - a. Mixed with soil at a ratio of 50% soil with 50% ASR prior to application on the working face, or
 - b. Placed on the working face to a minimum depth of 3" and then covered with soil a minimum depth of 3".
3. During the use of ASR as an ACM, soil cover to a full depth of six inches shall be applied once per week.
4. ASR shall not be used on any exterior/outside slopes and may not be used for intermediate cover.
5. The ASR must be sourced from within the approved service area of the landfill facility.

* A CDLF equipped with a liner system may use the ASR as alternate daily cover only. Use of more than six inches equates to disposal. ASR is not a C&D waste. To dispose of ASP in a lined CDLF, contact the Permitting Branch of the Solid Waste Section for further clarification.

ACM: Combustion Residuals (CR)/Ash

APPROVED LANDFILL USE: : MSWLF, C&DLF (lined)*, IndLF (lined)*

MATERIAL CHARACTERISTICS: Combustion Residuals or Ash are, generally, the residuals remaining from the combustion of coal or the incineration of waste materials. The CR/Ash generally consists of fine particles such as fly-ash as well as larger particles similar to sand, gravel or stone.

USAGE CRITERIA:

1. CR/Ash can be applied, in lieu of soil, to a full depth of six inches given calm site (weather) conditions.
2. If site (weather) conditions are, or are forecast to be, windy the CR/Ash must either be:
 - a. Mixed with soil at a ratio of 50% soil with 50% CR/Ash prior to application on the working face if it can become airborne or exhibits dust like properties, or
 - b. Placed on the working face to a minimum depth of 3" and then covered with soil a minimum depth of 3" if it can become airborne or exhibits dust like properties.
3. During the use of CR/Ash as an ACM, soil cover to a full depth of six inches shall be applied once per week, unless otherwise approved by the Section*.
4. CR/Ash may not be used for intermediate cover, if it can become airborne or exhibits dust like properties.
5. The CR/Ash must be sourced from within the approved service area of the landfill facility.

Warning: Some materials such, as flue gas desulfurization residue, are destined for recycle and cannot be contaminated with soil. Site specific handling practices should be discussed with the Solid Waste Section prior to implementation.

- * A CDLF or IndLF equipped with a liner system may use the CR as alternate daily cover only. Use of more than six inches equates to disposal. CR is not a C&D waste. To dispose of CR in a lined CDLF, or a non-CCB industrial landfill, contact the Permitting Branch of the Solid Waste Section for further clarification.

ACM: Construction and Demolition Debris (C&D) Fines

APPROVED LANDFILL USE: : MSWLF, C&DLF

MATERIAL CHARACTERISTICS: Construction and Demolition Debris Fines are, generally, the residuals and fine particles remaining in the bottom of dumpsters, roll-off containers and trucks used in the transportation or processing of C&D debris.

USAGE CRITERIA:

1. C&D Fines can be applied, in lieu of soil, to a full depth of six inches given calm site (weather) conditions.
2. If site (weather) conditions are, or are forecast to be, windy the C&D Fines must either be:
 - a. Mixed with soil at a ratio of 50% soil with 50% C&D Fines prior to application on the working face, or
 - b. Placed on the working face to a minimum depth of 3" and then covered with soil a minimum depth of 3".
3. During the use of C&D Fines as an ACM, soil cover to a full depth of six inches shall be applied once per week.
4. C&D Fines shall not be used on any exterior/outside slopes and may not be used for intermediate cover.
5. The C&D Fines must be sourced from within the approved service area of the landfill facility.

Warning: C&D fines can contain large percentages of drywall dust or gypsum. These materials may produce significant amounts of hydrogen sulfide, an obnoxious smelling compound. If odor problems develop, the use of the fines should be suspended immediately and the offending area covered with soil.

ACM: Petroleum Contaminated Soils (PCS)APPROVED LANDFILL USE: : MSWLF, C&DLF (lined)*, IndLF (lined)*

MATERIAL CHARACTERISTICS: Petroleum Contaminated Soils are, generally, native soils contaminated with some petroleum liquid. Generally, these soils are sourced from environmental cleanup sites, spill sites or sites associated with above ground or underground storage tank (AST or UST) removal. In the case of ACM usage, petroleum is narrowly defined as the low to medium boiling point petroleum derived **fuels** such as gasoline, kerosene, diesel, motor oil, mineral spirits and fuel oils #11 through #6. All other petroleum derived liquids such as solvents, acids, tars and asphalts are excluded. In all cases, the concentration of Total Petroleum Hydrocarbons (TPH) in the PCS cannot exceed 3,000 parts per million (PPM) regardless of type or test method. The material may not contain chlorinated solvents or other hazardous materials or exhibit the hazardous characteristic of flammable.

USAGE CRITERIA:

1. PCS can be applied, in lieu of soil, to a full depth of six inches.
2. The PCS must be stockpiled within a disposal area and shall be managed and applied in such a way that runoff cannot leave the lined landfill area.
3. The PCS shall be managed in such a way to prevent run-off and fugitive emissions (i.e. use of tarps, berms and/or wetting to prevent blowing).
4. PCS is prohibited from disposal. Therefore, the facility may not accept more PCS than can be used in a 45 day period. The amount of PCS accepted should not exceed 20% of the permitted facility average monthly waste stream.
5. PCS shall not be used on any exterior/outside slopes and may not be used for intermediate cover.
6. The PCS must be sourced from within the approved service area of the landfill facility.
7. PCS can only be used at lined landfill facilities.
8. Records must be maintained in the facility operating record indicating the volume of PCS accepted and applied at the facility on a daily basis.

* A CDLF or IndLF equipped with a liner system may use the PCS as alternate daily cover only. Use of more than six inches equates to disposal. PCS is neither a C&D nor an Industrial waste. To dispose of PCS in a lined CDLF, or a non-CCB industrial landfill, contact the Permitting Branch of the Solid Waste Section for further clarification.

ACM: Spray-applied Mortar Coating (SMC)

APPROVED LANDFILL USE: : MSWLF, C&DLF, IndLF

MATERIAL CHARACTERISTIC: SMC is, generally, a commercially sourced non-flammable, non-toxic product containing proprietary components including mix setting agents, reinforcing materials and cement. Other components, such as latex paint, may also be added to the mixture. All of the components are generally mixed on site with water and/or leachate to produce slurry that is then spray-applied to the working face.

USAGE CRITERIA:

1. SMC can be applied, in lieu of soil, given appropriate site (weather) conditions.
2. SMC must be applied in accordance with the manufacturers' application guidelines.
3. SMC must be applied in two directions to ensure adequate coverage.
4. During the use of SMC as an ACM, soil cover to a full depth of six inches shall be applied once per week unless otherwise approved by the Section.
5. The use of non-hazardous latex or water based paint in the mixture is approved provided that the paint has been collected for recycling.

ACM: Foam Coating (Foam)

APPROVED LANDFILL USE: MSWLF, C&DLF, IndLF

MATERIAL CHARACTERISTICS: Foam Coating is, generally, a commercially sourced non-flammable, non-toxic, non-hardening water based product. The proprietary liquid concentrate is delivered to the site and diluted with water prior to application with proprietary equipment.

USAGE CRITERIA:

1. Foam can be applied, in lieu of soil, given appropriate site (weather) conditions.
2. Foam must be applied in accordance with the manufacturers' application guidelines.
3. During the use of Foam as an ACM, soil cover to a full depth of six inches shall be applied once per week.
4. Foam shall not be used on any exterior/outside slopes and may not be used for intermediate cover.

ACM: Foundry Sand (Sand)

APPROVED LANDFILL USE: MSWLF, C&DLF (lined)*, IndLF (lined)*

MATERIAL CHARACTERISTICS: Foundry Sand is, generally, a by-product of the smelting and forging processes for metals fabrication. Metal pieces and particulate may also be found in the sand. Prior to use, a Toxicity Characteristic Leaching Procedure (TCLP) analysis must be performed to ensure no hazardous constituents are found in the sand at the source. The TCLP analysis results must be submitted with the Operation Plan revision.

USAGE CRITERIA:

1. Sand can be applied, in lieu of soil, to a full depth of six inches.
2. The Sand must be stockpiled within a disposal area and shall be managed and applied in such a way that runoff cannot leave the lined landfill area.
3. The Sand shall be managed in such a way to prevent run-off and fugitive emissions (i.e. use of tarps, berms and/or wetting to prevent blowing).
4. Sand is prohibited from disposal. Therefore, the facility may not accept more Sand than can be used in a 45 day period. The amount of Sand accepted should not exceed 20% of the permitted facility average monthly waste stream.
5. Sand shall not be used on any exterior/outside slopes and may not be used for intermediate cover.
6. The Sand must be sourced from within the approved service area of the landfill facility.
7. Sand can only be used at lined landfill facilities.
8. Records must be maintained in the facility operating record indicating the volume of Sand accepted and applied at the facility on a daily basis.

* A CDLF or IndLF equipped with a liner system may use the sand as alternate daily cover only. Use of more than six inches equates to disposal. Sand is not a C&D waste. To dispose of sand in a lined CDLF, a lined landfill not previously permitted to accept it or a non-CCB industrial landfill, contact the Permitting Branch of the Solid Waste Section for further clarification.

ACM: Soil/Mulch Mixture (S&M)

APPROVED LANDFILL USE: MSWLF, C&DLF, IndLF

MATERIAL CHARACTERISTICS: Soil/Mulch Mixture is, generally, a mixture of native soils and wood mulch generated from the grinding of yard trash, land clearing debris and pallets constructed of unpainted and untreated natural wood. Additionally, shredded tire chips may be used in addition to, or in lieu of, wood mulch.

USAGE CRITERIA:

1. S&M can be applied, in lieu of soil, to a full depth of six inches.
2. S&M can be mixed at a ratio from 80% soil to 20% mulch up to 50% soil to 50% mulch by volume.
3. During the use of S&M as an ACM, soil cover to a full depth of six inches shall be applied once per week.
4. S&M may not be used for intermediate cover.

ACM: Synthetic Tarps (Tarps)

APPROVED LANDFILL USE: MSWLF, C&DLF, IndLF

MATERIAL CHARACTERISTICS: Synthetic Tarps are, generally, a commercially sourced non-flammable, non-toxic, sheet product constructed of an impermeable synthetic polymer typically reinforced with fibers. Acceptable sheet products include, but are not limited to, geotextiles, polyethylene membranes, plastic film, tarps and composite geotextile/plastic membranes. Tarps may be applied by hand, using landfill equipment and/or an Automatic Tarping Machine (ATM).

USAGE CRITERIA:

1. Tarps can be applied, in lieu of soil, given appropriate site (weather) conditions.
2. Tarps must cover the entire working face. Any waste not covered by tarps must be covered by soil.
3. Tarps must be secured in place with the use of soils or other ballast system such as tires or sand bags.
4. During the use of Tarps as an ACM, soil cover to a full depth of six inches shall be applied once per week.
5. Tarps shall not be used on any exterior/outside slopes and may not be used for intermediate cover.